



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: H. KOMORI ET AL

SERIAL NO.: 09/921,973

EXAMINER: J. PHINNEY

FILED: AUGUST 2, 2001

GROUP: 2879

TITLE: CRT PANEL GLASS HIGH IN X-RAY ABSORBABILITY AND LOW
IN DEVITRIFICATION

DECLARATION UNDER 37 CFR 1.132

MAIL STOP RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Ken Choju, hereby declare as follows:

1. In March 1993 I graduated from the Department of Precise Application Chemistry of Okayama University and in April of that year I joined the Nippon Electric Glass Company, Ltd.

2. In April 1993 I participated in the development of artificial bone material in the Biomaterial division of Nippon Electric Glass Company, Ltd.

3. Since January 2001, I have been engaged in the development of display materials, including in CRT displays, in the Technical division of Nippon Electric Glass Company, Ltd.

4. On September 10, 2003, at the request of the inventors of the above-referenced application, I conducted the following experimental investigation to determine whether or not the glass samples disclosed in JP 63-215533 A (hereinafter "Reference 1") and JP 3-12337 A (hereinafter "Reference 2") teach the invention of U.S. Patent Application Ser. No. 09/921,973 (hereinafter "the present application").

5. Glass samples having the compositions specified in the Table reproduced below were prepared as follows. Glass Sample A was prepared to have the composition of Example 1 of the present application. Glass Sample B was prepared to have the composition of Example 3 of Reference 1. Glass Sample C was prepared to have the composition of Example 4 of Reference 2.

6. Each of Glass Samples A, B and C was put in a platinum crucible and melted in a furnace at a temperature of 1450°C for four (4) hours to obtain a molten glass. The molten glass was poured onto a carbon plate and shaped into a glass plate by annealing at a temperature of 540°C. The glass plate was next smashed and ground and then sieved to obtain a glass powder having a grain size of 300-500 μm . The glass powder was washed with distilled water and alcohol to remove fine particles and then dried for 24 hours in a dryer.

7. For each sample, the liquidus temperature and highest crystal deposition temperature were measured and the reactivity of the sample with refractory was evaluated. The results of the measurement and evaluation are shown in the Table reproduced below.

8. As shown in the Table, Glass Sample A had a composition with a ratio of $\text{SrO}/(\text{SrO}+\text{BaO})$ of 0.37 which falls within the range of 0.30 - 0.45 of the present application. Glass Sample A had an Al_2O_3 content of 0.3% which falls within the range of 0-1% of the present application. As a result, the liquidus temperature of Sample A was low at 850°C and the highest crystal deposition point was low at less than 1000°C. In the refractory reaction test, no deposition of the reactive devitrifying stones was observed at the interface between the refractory and the glass melt of Sample A.

9. Glass Sample B, described in Reference 1, had a ratio of $\text{SrO}/(\text{SrO}+\text{BaO})$ of 0.47 which is beyond the range of 0.30 - 0.45 of the present application. As a result the liquidus temperature was very high at 920°C. In the refractory reaction test, deposition of the reactive devitrifying stones was observed at the interface between the refractory and the glass melt of Sample B.

10. Glass Sample C, described in Reference 2, had a ratio of $\text{SrO}/(\text{SrO}+\text{BaO})$ of 0.33 which falls within the range of 0.30 - 0.45 of the present application. However the Al_2O_3 content of Glass

Sample C was 1.8% which is beyond the range of 0-1% of the present application. As a result the liquidus temperature was high at 870°C. In the refractory reaction test, deposition of the reactive devitrifying stones was observed at the interface between the refractory and the glass melt of Sample C.

11. As described above, in the present application the content of Al_2O_3 is strictly limited within the range of 0-1% and the ratio of $\text{SrO}/(\text{SrO}+\text{BaO})$ is strictly limited within the range of 0.30-0.45. As a consequence it is possible to achieve a low liquidus temperature, thus suppressing the production of reactive devitrifying stones at the interface between the refractory and the glass melt. The data described above clearly shows that the glass samples disclosed Reference 1 and Reference 2 do not teach the invention of the present application.

12. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereto.

Component	Glass Sample A (mass %)	Glass Sample B (mass %)	Glass Sample C (mass %)
SiO ₂	55.5	56.4	51.9
Al ₂ O ₃	0.3	-	1.8
MgO	-	-	-
CaO	-	2.5	-
SrO	7.8	9.4	7.5
BaO	13.3	10.4	15.3
ZnO	7.0	6.0	7.7
Na ₂ O	3.4	4.3	3.0
K ₂ O	8.8	8.8	8.7
Li ₂ O	1.5	1.0	1.6
ZrO ₂	1.4	-	1.4
TiO ₂	0.3	0.5	0.4
CeO ₂	0.5	0.6	0.5
Sb ₂ O ₃	0.2	0.1	0.2
SrO/(SrO + BaO)	0.37	0.47	0.33
Liquidus Temperature	850°C	920°C	870°C
Highest Crystal Deposition Temperature	<1000°C	1120°C	1110°C
Refractory Reaction	○	X	X

Dated: February 2, 2004

Ken Choju
Ken Choju